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ABSTRACT

The Educational Testing Service is currently engaged in a large-scale development project related to teacher licensure. This project will develop a new generation of assessments for licensing beginning teachers, based on two research projects. One is Project CHART, an effort to identify state requirements for licensure in all subject areas currently being taught in elementary, middle, and secondary schools. This project is also identifying recommended standards for teacher preparation established by professional organizations. The second project is a series of job analysis studies aimed at identifying what teacher candidates and new teachers should know and should be able to do. The results of Project CHART are compared with the results of the job analysis in one area, "General Principles of Teaching and Learning," an assessment that focuses on pedagogical principles that cross subject matter and grade boundaries. Results indicate considerable agreement among states, professional associations, and the members of the educational community. Areas of disagreement are explored, along with their implications for teacher preparation and the development of a knowledge base for teacher education. (Contains 5 tables and 15 references.) (SLD)

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A KNOWLEDGE BASE FOR TEACHER LICENSURE: A COMPARISON OF STATE REQUIREMENTS, PROFESSIONAL ASSOCIATION RECOMMENDATIONS AND TEACHER, TEACHER EDUCATOR, AND ADMINISTRATOR OPINIONS OF TEACHER PREPARATION ON THE PRINCIPLES OF LEARNING AND TEACHING

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A Knowledge Base for Teacher Licensure: A Comparison of State Requirements, Professional Association Recommendations and Teacher, Teacher Educator, and Administrator Opinions of Teacher Preparation on the Principles of Learning and Teaching

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Educational Testing Service

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A Knowledge Base for Teacher Licensure: A Comparison of State Requirements, Professional Association Recommendations and Teacher, Teacher Educator, and Administrator Opinions of Teacher Preparation on the Principles of Learning and Teaching

Abstract

A notable aspect of the educational reform movement is the increasing attention placed on procedures and assessments for licensing teachers. Currently, Educational Testing Service (ETS) is engaged in a large-scale development project related to teacher licensure. This project will develop a new generation of assessments for licensing beginning teachers. At the foundation of these assessments are two research projects. One of these, Project C H A R T, is an effort to identify state requirements for licensure in all subject areas currently being taught in elementary, middle, and secondary schools. This project is also identifying recommended standards established by professional organizations and associations concerning the skills and competencies on which teacher preparation programs should focus. The second project is a series of studies aimed at identifying what teacher candidates and new teachers should know and be able to do. The methodology being used in this research is job analysis. The purpose of these job analyses is to identify, through surveys of practicing professionals, the important knowledge areas and skills for new teachers.

With these two projects, the question arises as to whether there is agreement among states, professional associations, and practicing professionals about what new teachers should know and be able to do. This paper addresses this question by comparing the results of Project C H A R T with the results of the job analysis for one area, General Principles of Teaching and Learning. General Principles of Teaching and Learning is a subject assessment that focuses on pedagogical principles that cross subject-matter and grade boundaries.

The results of this comparison indicate that there is considerable agreement among states, professional associations, and the members of the educational community. There are, however, several areas of disagreement between and within these groups. The paper discusses the areas of agreement and disagreement as well as their implications for teacher preparation and regulation and the development of a knowledge base for teacher education.

Introduction

A notable aspect of the educational reform movement is the increasing attention placed on procedures and assessments for licensing teachers (Mehrens, 1986). In different states this has resulted in a variety of assessments, including basic skills, professional or pedagogical knowledge, general knowledge, subject-matter knowledge, and teaching performance (Kuehn, Stallings, and Holland, 1990). To some extent, the different assessment formats are a result of differences in licensure or certification requirements across states. These differences have complicated issues such as reciprocity of teaching credentials and job mobility. At a time when teachers are in increasing demand, there continue to be barriers moving into and within the profession.

Currently, Educational Testing Service (ETS) is engaged in a large-scale development project related to teacher licensure, *The Praxis Series: Professional Assessments for Beginning Teachers™*. This project will develop a new generation of assessments for licensing beginning teachers. It will incorporate advances in measurement and technology and result in tests for three stages of teacher development (Dwyer, 1988). The first series of tests, Computerized Skills Assessments, will assess skills in reading, writing, and mathematics that are a necessary part of the foundation for teacher development and practice (Rosenfeld & Tannenbaum, 1991). Administration of this stage will likely occur during the sophomore year of college, prior to entering a teacher education program. Subject Assessments, the second test series, will focus on candidates' knowledge of the subject matter they intend to teach, content-specific pedagogy, and general principles of teaching and learning. The Subject Assessments will be administered at the completion of the teacher education program. The third series, Performance Assessments, will be designed to measure teaching performance and be administered after some teaching experience has been acquired (e.g., at the end of the first year).

At the foundation of each of these assessments are two large-scale research projects. One of these projects, Project C H A R T, is an effort to identify state requirements for licensure in all subject areas currently being taught in elementary, middle, and secondary schools. In identifying these requirements, similarities and differences across the states become evident. Project C H A R T is also identifying recommended standards established by professional organizations and associations concerning the skills and competencies on which teacher preparation programs should focus in given subject areas.

A second research project is a series of studies aimed at identifying what teacher candidates and new teachers should know and be able to do. The methodology being used in this research is job analysis (Arvey & Faley, 1988). The purpose of the job analysis is to identify, through surveys of practicing professionals, the important knowledge areas and skills for new teachers. At present, 18 job analyses are underway in a variety of disciplines.

With these two projects in progress, the question arises as to whether there is agreement among states, professional associations, and practicing professionals about what new teachers should know and be able to do. To address this question, this paper will compare the results of Project C H A R T and the job analysis for one area, Principles of Learning and Teaching. Principles of Learning and Teaching is a subject assessment that focuses on pedagogical principles that cross subject-matter and grade boundaries. For example, the test will assess a teacher's understanding of human growth and development, principles of curriculum design, classroom management, and evaluation. The test will also assess a teacher's understanding of professional issues, such as legal rights and responsibilities of teachers and students.

Methods

Prior to describing the results of the Project C H A R T and job analysis comparison, some brief description of the specific methods used in each project is warranted. The paragraphs that

follow describe these methods. A more detailed account of Project C H A R T may be found in Klem (1990). Similarly, the interested reader is directed to Reynolds (1991) for a report of the Principles of Learning and Teaching job analysis.

Project C H A R T

The process of developing the Project C H A R T database began with obtaining source documents containing teacher licensing requirements from State Departments of Education and teacher licensing boards across the country. Project staff analyzed the information to identify teacher content area requirements in each state. Because the states use different formats (e.g., some states typically state their requirements in terms of courses, while others use skills, competencies or knowledge areas) project staff then translated the information to obtain common wording that would allow for comparisons across states. Each state's translated requirements were then sent back to the state. It was explained to the state that their wording had been modified for ease in making comparisons with other states. They were asked to review the modified language and verify it in terms of accuracy of meaning. If states believed the modified language was inaccurate, they were asked to make appropriate changes. Their changes were subsequently incorporated in the Project C H A R T database.

Similarly, standards and recommendations made by fifty-three professional organizations and associations concerning teacher preparation and knowledge were reviewed, analyzed, translated, verified, and revised in the database. For Principles of Learning and Teaching, data were collected from fourteen associations[1] that have established standards for all teachers:

American Association of Colleges for Teacher Education (AACTE)
American Federation of Teachers, National Council on Measurement in Education, National Education Association (AFT/NCME/NEA)
International Reading Association (IRA)
Joint Council on Economic Education (JCEE)
National Association of State Directors of Teacher Education and Certification (NASDTEC)

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[1] Several of these associations have joined together to endorse a set of standards. Where this has occurred, they are listed as a group.

National Association for the Education of Young Children (NAEYC)
National Council for the Accreditation of Teacher Educators (NCATE)
National Council for Geographic Education (NCGE)
National Council for the Social Studies (NCSS)
National Science Teachers Association (NSTA)
Speech Communication Association, American Alliance for Theater and Education (SCA/AATE)

At present, Project C H A R T has state and professional association information for Principles of Learning and Teaching as well as the following subject areas:

Art	French	Physics
Biology	General Science	Reading Specialist
Business Education	German	School Guidance and Counseling
Chemistry	Health	School Social Worker
Early Childhood Education	Home Economics	Social Studies
Earth and Space Science	Mathematics	Spanish
Education of Students with Mental Retardation	Music Education	Special Education
Elementary Education	Physical Education	Speech Communication
English Language and Literature		

Job Analysis

The job analysis methodology used to evaluate the importance of the domain of Principles of Learning and Teaching consisted of several steps. The first involved the construction of a draft job analysis inventory by ETS test specialists and the job analysis project director. It was based on a review of relevant literature that included texts, curricular materials, and results from Project C H A R T. The draft contained several categories devoted to content areas (e.g., human development and the learning process, knowledge of curriculum planning and design). Within each category were several statements that attempted to map the important knowledge aspects of the category.

Next, the draft was reviewed by eight external subject-matter experts (SMEs), consisting of three classroom teachers, four teacher educators, and one school administrator. This external

review panel was instructed to review the draft and to suggest modifications they felt were necessary to adequately cover the important principles of teaching and learning. These individuals were interviewed over the phone by project staff to obtain their modifications. This information was then used to revise the draft.

Third, a four-day meeting was held with an advisory committee of nine SMEs to refine the draft further. These individuals were not involved in the review mentioned above. The advisory committee was charged with developing a final version of the job analysis inventory and with developing the specifications for the new test. It consisted of five classroom teachers and four teacher educators. The instructions given to committee members were essentially the same as those given to the first group of reviewers.

In revising the final version of the job analysis inventory, the advisory committee chose wording that emphasized applied theory instead of theory by itself. This is most apparent in two areas: history and philosophy of education and theories of teaching. So, for instance, instead of labeling a content area "foundations of education," the committee developed statements such as "social, political, and historical events that have influenced curricula planning" and "social and political conditions (e.g., how society influences and has influenced what knowledge and materials are valued)." Likewise, in the inventory theories of teaching are assumed to undergird the knowledge teachers draw upon as they interact with students. To underscore this point, the job analysis introduction to the dimension of Management of the Learning Process states: "The following statements refer to pedagogical theories and principles that affect the teacher's pedagogical choices as they interact with students." The intent of the advisory committee was to use language that illuminated the role of theory in practice.

Just as the advisory committee elected to word the inventory in a way that emphasized applied theory, they used terminology that spoke to the teacher's need to create positive learning situations for <u>all</u> children, regardless of their abilities, proclivities, or exceptionalities.

Thus, the committee did not identify any particular group of students, such as "at-risk" or "learning disabled" or "gifted and talented," in the inventory. The only mention of special groups of students is in the knowledge statement "schools' legal responsibilities to special populations as determined by federal law (e.g., PL 94-142, services for students with limited English proficiency, Title I/Chapter I)." The advisory committee assumed that the inventory covered knowledge necessary to all teachers, regardless of the student population, grade level, or subject matter taught. Therefore, no special populations of students were specified.

After the advisory committee meeting, the job analysis inventory was pilot tested on a group of two classroom teachers, one teacher educator, and one school administrator. The purpose of the pilot was to ensure that the instructions were clear and that respondents could use the rating scale. Any needed changes were then made to the inventory, which, subsequent to this step, was in final form. The final inventory consisted of 64 statements. Once a tentative content domain had been developed by the iterative process described above, it was evaluated in terms of its importance to the newly licensed teacher. The evaluation consisted of administering the job analysis inventory to a large group of practicing professionals and analyzing the results of the administration.

The group of practicing professionals receiving the inventory included classroom teachers, college faculty, and school administrators. The inventory, with an accompanying cover letter and postage-paid return envelope, was mailed to 921 teachers, 422 teacher educators, 425 school administrators, 52 state department administrators, 22 prospective teachers, and 9 advisory committee members for a total sample of 1851. A follow-up postcard requesting completion of the inventory was sent one week after the initial mailing.

In accordance with established professional standards (cf. AERA, APA, NCME, 1985), an importance rating scale was used to evaluate the knowledge areas in the survey. The scale is presented below.

Regardless of the subject matter or grade level taught, how important is it for a newly licensed (certified) teacher to know the following in order to perform his/her job in a competent manner?

(0) Of no importance
(1) Of little importance
(2) Moderately important
(3) Important
(4) Very important

Once the job analysis surveys were mailed, completed, and returned, the data were analyzed. The overall return rate for the job analysis was 45%. In general, the importance ratings were relatively high. For example, the lowest rated item (#60, political issues) received an average rating of 2.25, which is above the midpoint of the scale. Of the 64 statements in the inventory, 36 (55%) had mean ratings above 3.0. The overall mean for the statements was 3.03. This is likely a result of the developmental process which ensured that only important topics were included in the inventory. Another general trend was the higher ratings teacher educators and state administrators tended to give vis à vis teachers and school administrators. The overall mean for the 64 items was 3.22 for teacher educators, 3.20 for state administrators, 3.06 for school administrators, and 2.91 for teachers.

The job analysis results were then reported to the advisory committee of SMEs. Based on the results, the advisory committee established specifications for the development of the test. These specifications will be used by test developers and item writers to create the Principles of Learning and Teaching test.

Results

For purposes of discussion, we compare and contrast Project C H A R T and job analysis results along five dimensions: 1) Human Development and Learning, 2) Curriculum Planning and Design, 3) Management of the Learning Process, 4) Assessment, and 5) Professional Issues

Related to Teaching and Learning. These dimensions were developed by the job analysis advisory committee.

Human Development and Learning

Table 1 presents data from Project C H A R T and the job analysis concerning human development and learning. Data on the left side of the table are from Project C H A R T and include a list of content areas that were judged by the authors to be related to human development and learning. Next to each content area are the number of states that require the area for teacher licensure and the number of professional associations that have recommended standards about the area. Note that the maximum number of states for each area is fifty-one (District of Columbia was treated as a state), while the maximum number of professional associations is eleven. The right side of Table 1 presents the Human Development and the Learning Process section from the job analysis and includes the knowledge area statements that were rated by the survey respondents. Next to each statement is the mean importance rating for the total sample as well as the mean rating for teachers, school administrators, state administrators, and teacher educators.

Insert Table 1 about here

Human Development and Learning, may be conceptualized into two subdimensions: 1) Stages/Patterns/Theories of Development and 2) Factors Affecting Development and Learning. Within Stages/Patterns/Theories of Development, both Human Growth and Development and the combined content area of Study of the Learning Process, Educational Psychology, Theories of Learning, and Knowledge of the Learner are required by a large number of states (i.e., 39). Similarly, Child/Adolescent Psychology is required by 20 states. These areas are similar to items 1 - 6 on the job analysis. Note that the total sample ratings for

these items range from 2.99 - 3.52. The average rating for these statements is 3.19, which translates to *important* on the scale. Item 4, affective development stages/patterns, had the fifth highest mean rating (3.52) on the survey. Thus, there seems to be correspondence between the states and practicing professionals on the importance of these areas. Similarly, three professional associations recommended knowledge of the Study of the Learning Process, Educational Psychology combination and two associations recommended knowledge of Human Growth and Development. The remaining two content areas under this subdimension, Relationship of Teaching and Learning Theories to Development and Sequential Nature of Subject Knowledge Acquisition, are required by fewer states (i.e., 10 and 12 states, respectively).

The second subdimension, Factors Affecting Development and Learning, contains content areas that are required by few states. This subdimension, and particularly the content category Influences which Affect Student Learning/Life, seems to correspond to items 7 - 14 in the job analysis. In spite of the small number of state requirements here, the job analysis mean ratings for these areas are moderately high (range: 2.73 - 3.17), and one professional association recommends it. Thus, it might be inferred that the survey respondents and at least one professional association attach more importance to this area than do state policy makers. An interesting finding, which appears to contradict the Project C H A R T results, is the high importance ratings state administrators gave to items 7 - 14 (range: 3.08 - 3.54). In fact, state administrators gave the highest ratings on six of the eight items.

Curriculum Planning and Design

Data concerning Curriculum Planning and Design are presented in Table 2. Note that only one content area from Project C H A R T is required by a majority of states, Curriculum Planning (Including Diagnostic Capabilities and Program Design). This category is quite broad; it seems to encompass all of curriculum planning and design. The corresponding section in the job analysis, items 16 - 26, is more specific. Consequently, comparisons are difficult. From the

job analysis the most important areas are: relating instructional activities to learner characteristics (item 19), understanding characteristics of the school population (item 20), and current trends and research findings in education (item 21). The areas of less importance include philosophical underpinnings and definitions of education held by curricula planners, differentiating characteristics of various models of curricula, and social/political/historical events that influence curricula planning (items 22, 25, and 18, respectively).

Insert Table 2 about here

Among respondent groups there was discrepancy between the ratings given by teachers and teacher educators. The overall average of items 16-26 for teachers was 2.63, while the overall average for teacher educators was 3.03. School administrators and state administrators gave similar overall ratings for this section (i.e., 2.83 and 2.88, respectively).

Management of the Learning Process

Management of the Learning Process is the largest dimension in both Project C H A R T and the job analysis. In the job analysis it also appears to be the most important. The overall average rating for this section was 3.32, as compared with 2.90 for the knowledge areas in the other dimensions. In the job analysis this section also shows the highest similarity in ratings across the four respondent groups.

The Project C H A R T content areas may be grouped into five subdimensions: General Teaching Techniques, Management Techniques, Instructional Media and Technology, Teaching Children with Exceptionalities, and Teaching Thinking, Reading, and Writing. Project C H A R T and job analysis results for this section are summarized in Table 3.

Insert Table 3 about here

Under the General Teaching Techniques subdimension, the content area Methods, Materials, Techniques and Strategies for Teaching is a requirement in 46 states. This is the highest number of states among the Project C H A R T results. This requirement corresponds to item 37 in the job analysis, repertoire of teaching strategies, which received the second highest rating overall (3.69). Twelve states and one professional association require/recommend Teacher Characteristics/Behaviors as they Affect the Learner. This seems related to item 43 on the job analysis, appropriate teacher behaviors in response to individual and cultural diversity. The average importance rating for item 43 was 3.33. Note that this item received particularly high ratings from state administrators ($\bar{X}$=3.76). Twelve states and one professional association also require/recommend Theories of Teaching. This rather broad content area may correspond to item 21, current trends and research findings in education (see Table 2).

Under the subdimension of Management Techniques in Project C H A R T, Classroom Management was required by 30 states, Interpersonal Skills and Human Relations by 25 states, and Methods/Attitudes to Enhance Pupil Self-Esteem/Confidence by 17 states. Five professional associations recommended Interpersonal Skills and Human Relations and two recommended Classroom Management as areas upon which teacher education programs should focus. These areas seem related to items 38 - 47 in the job analysis. The average rating for items 38 - 47 was 3.25. In particular, use of different disciplinary styles, attention to and structuring climate for learning, and dynamics of interpersonal relationships received high importance ratings. It is of note that there are no requirements in Project C H A R T tied to a knowledge of different types of discipline, although it received the third highest importance rating in the job analysis. Of course, disciplinary styles can be subsumed under the broader area

of classroom management. The highest rated item in the job analysis was how to select motivational techniques (item 31), which, unlike most other items, was rated slightly higher by teachers and school administrators than by teacher educators and state administrators. In contrast, only five states require Motivation Theories and Methods.

In Project C H A R T the subdimension Instructional Media and Technology has two content areas: Instructional Media Technology and Computer Literacy and Technology. There are requirements in twenty states for the former and nine states for the latter. In addition, two professional organizations have recommendations for Instructional Media Technology. These areas correspond to job analysis item 45, operation and use of electronic media, which received a moderately high mean rating by the total sample of 2.93.

The fourth subdimension, Teaching Children with Exceptionalities, consists of four content areas in Project C H A R T. Two of the four, Exceptional Child Education and Instructional Strategies for Exceptionalities Including Handicapped through Gifted, are required in a relatively high number of states (i.e., 27 and 13, respectively). The former is also recommended by one professional association. In contrast, the more-specific content areas of IEP and Teaching Exceptional Children in the Regular Classroom are required in three states and one state, respectively. As previously mentioned, the job analysis does not address specific groups of students, so a valid comparison is not possible. Item 28, which concerns structuring lessons based on the needs and characteristics of diverse populations, could be loosely interpreted to be related to exceptional education. The mean importance rating for this item was 3.17, which is relatively high. Note, however, that teachers gave this item significantly lower ratings than did state administrators and teacher educators. A second job analysis item, school's legal responsibilities to special populations as determined by federal law (#61), is related to the legal aspects of exceptional education. The mean rating for this item was 2.81.

The final subdimension in Management of the Learning Process is Teaching Thinking, Reading, and Writing. Only one of the four content areas in this subdimension is required by more than two states (i.e., Teaching Reading in the Content Specialization Area, 33 states). This area is also the only area that was recommended by a professional association. Like the previous subdimension, teaching thinking, reading, and writing is not directly addressed in the job analysis. It is being addressed, however, in several job analyses for other subject assessments.

Assessment

Project C H A R T and job analysis data for Assessment are presented in Table 4. As can be seen, of the ten Project C H A R T content areas in Table 4, only three are required by any states. The remaining seven are in the table because they are recommended by professional associations. Of the three required by states, two are required by only one state. The third content area, Educational Measurement and Evaluation, is quite encompassing and is required in 27 states. Thus, in terms of state requirements, there is a lack of specificity concerning what new teachers should know in regard to assessment.

Insert Table 4 about here

The job analysis results may shed light on this lack of specificity. There are eight job analysis items that pertain to assessment (items 49 - 56). The average rating across the eight items was 2.94, which is slightly below the average for the survey (i.e., 3.03). The highest rated items were: use of student learning tasks/products as diagnostic aids, teacher self-evaluation as a means to enhance instructional effectiveness, and methods for interpretation, reporting, communication of data to various populations. The lowest rated items were measurement concepts (e.g., validity, reliability, standardization) with a mean rating of 2.62, and evaluation

issues (e.g., non-discriminatory evaluation, inappropriate use of tests) with a mean of 2.76. Thus, it seems that the survey respondents place more importance on the utility of assessments as formative and diagnostic tools than on their technical and theoretical aspects. It should be pointed out, however, that teachers gave consistently lower ratings on items in this section than did state administrators and teacher educators. For some items (e.g., #51, #55, #56) these differences are striking.

Professional Issues Related to Teaching and Learning

Table 5 presents data for Professional Issues Related to Teaching and Learning. There are four Project C H A R T subdimensions in the table: 1) Issues Affecting Education, 2) Rights and Responsibilities, 3) Professional Resources, and 4) Foundations. The corresponding section in the job analysis is section E (items 58 - 68). The job analysis results are highly variable for this section. That is, four of the eleven items have mean ratings above 3.0, yet the section also contains the two lowest rated items in the survey (#60, political issues and #67, roles and functions of professional organizations in education).

Insert Table 5 about here

There are 10 content areas listed in the Issues Affecting Education subdimension in Table 5. Of these, only one, School Organization, is required in more than 10% of the states; fourteen states require School Organization. This appears to be related to item 59 in the job analysis, school-related issues, which received a mean rating of 3.05. Thus, there seems to be correspondence between this state requirement and the opinions of teachers, teacher educators, and administrators.

Six of the remaining nine areas in Issues Affecting Education can be loosely grouped together as current social issues and problems. They are: Current Issues in Education,

Problems in Education, Issues Related to Children at Risk, Physiological/Sociological Effects of Substance Abuse, Recognition and Reporting of Child Abuse/Neglect, and Referral Process/Techniques. Individually, none of these are licensing requirements in more than three states. It is noteworthy that the corresponding job analysis item, social issues (e.g., substance abuse, teenage pregnancy, child abuse, homelessness--#58) received a high mean rating of 3.30. Thus, there is some discrepancy between the states and the survey respondents concerning the importance of social issues and problems.

Under the Rights and Responsibilities subdimension two content areas are each required by 15 states. The first, Least Restrictive Environment, is no doubt part of the moderate emphasis that states place on exceptional education (see Table 3). The second is School Law Including Rights and Responsibilities. The remaining two content areas concern professional ethics and are required by fewer states. The subdimension seems to correspond to several job analysis items: schools' legal responsibilities to special populations as determined by federal law (#61, $\bar{X}$=2.81) , students' legal rights inside and outside of the classroom (#64, $\bar{X}$=3.19) and teachers' legal rights inside and outside the classroom (#63, $\bar{X}$=3.06) .

Professional Resources is the third Project C H A R T subdimension in Table 5. The content area required by the highest number of states is Professional Organizations (13 states). In contrast, the corresponding job analysis statement, roles and functions of professional organizations in education, received a relatively low mean rating of 2.28. Educational Research is a requirement in eight states. Related items in the job analysis concern professional literature for teachers (item 68) and current trends and research findings in education (item 21, see Table 2). While item 68 received a moderately high overall rating of 2.85, teachers gave the item a significantly lower rating (2.60) than did teacher educators (3.30). The other two content areas

in this subdimension, Study of Teaching and Study of the School, are both required in only one state (Arkansas).

The final subdimension, Foundations, includes the broad content area of Foundations of Education (Social, Historical, Comparative, Philosophical). Forty-three states require competence or knowledge of this area. This is the second-highest number of states in the Project C H A R T results. In addition two professional associations have recommended standards about educational foundations. This area seems related to job analysis items 16-18 and 22 in Table 2. Note that these items received relatively low mean ratings (range: 2.33 - 2.67). Thus, it appears that practicing professionals attach less importance to Foundations of Education than do the states and professional associations.

Differences on Job Analysis Ratings among Practicing Professionals

Although respondents rated most of the job analysis knowledge areas between moderately important and very important, it is apparent in Tables 1 - 5 that there are differences in the mean ratings for most areas across job categories (i.e., teachers, school administrators, state administrators, teacher educators). One noticeable difference is that teachers gave the lowest mean ratings on 52 of the 64 statements. Teachers and school administrators tied for the lowest mean ratings on three of the remaining twelve areas (#24 -- curricular materials selection and evaluation, #59 -- school-related issues, and #66 -- roles and functions of school-related personnel). By themselves, school administrators gave the lowest mean ratings on seven knowledge areas (#58, 60, 62, 63, 64, 65, 67). These areas all fall into the domain of Professional Issues Related to Teaching and Learning. Teacher educators and state administrators gave the same lowest rating on only one knowledge area (#31 -- how to select motivational techniques). And state administrators gave the lowest mean rating on one knowledge area (#47 -- use of out-of-school external resources). From these results, we can infer that teachers' expectations for beginning teachers tend to be lower than those of school

administrators, teacher educators, and state administrators. It is important to remember, however, that in all of the knowledge areas reported above, except for #22, 60, and 67, the mean ratings for the total sample were above 2.50, the cut-off point used to decide which content should be considered for inclusion in the test of Principles of Learning and Teaching.

Many of the differences seen in Tables 1 - 5 are statistically significant. That is, in most cases, the differences in mean ratings are not due to chance. To identify statistically significant differences, analysis of variance was used. Scheffé's test (1953) was then used to establish the source of any significant effects obtained in the analysis of variance tests. Due to the high number of tests, a stringent level of significance (α = .01) was used. The results of these analyses are summarized below.

Teachers and School Administrators differed significantly in their ratings on 22 knowledge areas (#1, 2, 3, 4, 21, 22, 25, 26, 28, 30, 36, 37, 39, 40, 42, 43, 49, 50, 51, 52, 62, 63). This represents 34% of the inventory. Teachers gave the lower mean rating on all areas except #62 and #63, which concerned issues related to employment and teachers' legal rights.

Teachers and Teacher Educators differed significantly on 41 knowledge areas (#1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, 18, 20, 21, 22, 23, 25, 26, 28, 29, 30, 33, 35, 36, 37, 42, 43, 49, 50, 51, 52, 53, 54, 55, 56, 61, 68). This represents 64% of the inventory. Teachers gave the lower rating on all 41 areas.

Teachers and State Administrators differed significantly on nine knowledge areas (#2, 3, 11, 12, 28, 50, 51, 55, 56) -- 14% of the inventory. Teachers gave the lower rating on all nine areas.

School Administrators and Teachers Educators differed significantly on 13 knowledge areas (#6, 11, 12, 17, 20, 28, 55, 60, 61, 62, 63, 67, 68) -- 20% of the inventory. School administrators gave the lower rating on all 13 areas.

School Administrators and State Administrators differed significantly on one knowledge area (#11) -- 2% of the inventory. School Administrators gave the lower rating on this area.

State Administrators and Teacher Educators did not differ significantly on any areas.

On 17 knowledge areas, or 27% of the inventory, there were no statistical differences found among the respondent job groups (#10, 19, 24, 31, 32, 34, 38, 41, 44, 45, 46, 47, 58, 59, 64, 65, 66).

Discussion

Prior to discussing the results of this study, some mention of its limitations are in order. The materials reviewed herein (i.e., Project C H A R T and the job analysis) are subject to alternative interpretations. The areas covered in both documents lack specificity and, therefore, are difficult to classify. The material in Project C H A R T is a distillation of a large amount of literature and documentation from the states and professional associations. In categorizing this information, many judgments were made. Although these judgments were verified by the states and professional associations, it is not unreasonable to assume that different judges might categorize the same information in slightly different ways. The items in the job analysis, although carefully developed, may have been interpreted somewhat differently by different respondents. In addition to these interpretation problems, comparisons were made between the results of the two documents that involved additional judgments by the authors. Some of the linkages between Project C H A R T and the job analysis were obvious, while some were more subjective. The broadly defined categories within, and the lack of exact matches between, the two documents made the comparison rather difficult, and, perhaps, open to some debate.

The lack of specificity for many educational terms also creates problems in areas other than educational research. The fact that many terms are used for a single educational area functions as a deterrent to the professionalization of educators, and as a barrier to inter-state transferability of educational credentials (cf. Koepke, 1990). If educators are to advance toward the illumination of a knowledge base of teaching, toward reciprocity of teaching credentials between states, and toward increased professionalism, a first step must be to articulate educational terminology that is precise and agreed upon by the various groups in the field.

The above limitations aside, this study is the first known attempt at comparing state requirements, professional association recommendations, and teacher, teacher educator, and

administrator opinions concerning teacher preparation. Several findings are of interest and perhaps worthy of further study.

Similarities between Project C H A R T and the Job Analysis

The results of this study appear to indicate similarities between practicing professionals' perceptions of what beginning teachers should know and state content area requirements for licensing beginning teachers. In particular, the following seven areas received high importance ratings and are required by 20 or more states:

Stages, Patterns, and Theories of Development
Curriculum Planning and Design[2]
Methods, Techniques, and Strategies for Teaching
Classroom Management
Interpersonal Skills and Human Relations
Instructional Media Technology
Educational Measurement and Evaluation

In addition, at least one professional association recommends each of the above as a standard for teacher preparation. While the importance of several of the areas, such as classroom management and teaching techniques, is well established in the literature (and the folklore) of teaching, the importance of some other areas (e.g., instructional media technology) is perhaps reflective of new trends (Sheingold, 1991). This finding of areas that have agreed upon importance provides a basis for teacher educators to design curriculum; it provides focus for developers and users of teacher licensing exams; it provides direction for states to follow in reviewing and revising their individual licensing requirements; and it provides the beginnings of a knowledge base definition for teachers.

Differences between Project C H A R T and the Job Analysis

Possibly of greater interest are those results that show a lack of correspondence between state requirements and the opinions of practicing professionals. Four areas were identified that

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[2] For Curriculum Planning and Design, and for Educational Measurement and Evaluation, the states word their requirements in a general way, the job analysis is more specific.

received high importance ratings in the job analysis, but are requirements in relatively few, if any, states, nor are any recommended by more than one association. They include:

Factors Affecting Development and Learning (e.g. neglect/abuse, language, homelessness, self-image)
Selection of Motivational Techniques
Use of Different Disciplinary Styles
Social Issues Affecting Education

What is striking about this is the topical and controversial nature of these areas. They are frequently mentioned in the media; they are aspects of teaching for which many new teachers feel unprepared (Henry, 1986; Stone, 1987; Veenman, 1984); they appear to be an increasing demand on teachers. Perhaps the current and controversial nature of these areas explains the lack of correspondence in the results. Teachers, teacher educators, and administrators are faced with the changing demands of the classroom and understand the importance of these areas. Those who set licensing requirements and some of the professional associations may simply be lagging slightly behind. It will be interesting to see whether more states require and more professional associations set standards for these areas in the near future.

The implications here are for educational researchers, states, and professional associations. Educational researchers need to determine if these differences are a result of semantic differences. Do states and professional associations see these areas as being subsumed under other areas, or are there specific reasons for omitting them? States and professional associations need to review their requirements/standards to determine whether these areas should be added due to their perceived importance among educators.

These areas also received high importance ratings from state administrators on the job analysis survey. As it is state officials who participate in determining state requirements for teacher licensure, this finding was unexpected. As mentioned above, one possible explanation is that requirements in some states may be changing and that state officials responded to the survey based on future requirements. A second possible explanation is that state officials who

participated in the survey were not influential in determining their state's requirements. Before implications for this finding can be ascertained, further research is needed to determine its cause.

In addition to those areas mentioned above, one area, Foundations of Education, received low ratings on the job analysis but is a licensing requirement in 43 states. States need to review these data to determine whether Foundations of Education is a justified licensing requirement.

Differences in Perceptions among Practicing Professionals

An unanticipated finding of this study concerns the differences in job analysis ratings given by teachers, school administrators, state department administrators, and teacher educators. While these groups found virtually all areas somewhat important for teaching, teachers rated most areas lower than did the other groups. It appears that those who are in the trenches of daily school life have a somewhat different perception of the job than do those educators more removed from the classroom. A dialogue between those who teach and those who teach, supervise, and license teachers seems needed so that there is greater agreement about what beginning teachers should know.

Recommendations for Further Study

In addition to replication efforts, further investigation is required in the areas of curriculum planning and design, assessment, and stages/theories of development and learning. In these areas, state requirements and the job analysis items were often not described at the same level of generality, making comparisons imprecise. The areas of exceptional child education and teaching reading in the content specialization area also require additional investigation. Both of these areas are requirements in more than 20 states, but were not included in the job analysis survey. Therefore, no comparisons could be made in the present study.

Summary

In summary, this study has attempted to assess the degree of agreement among states, professional associations, and practicing professionals about what beginning teachers should know and be able to do. The results are preliminary, but worthy of further and closer investigation. At a time when many are calling for changes in teacher licensing procedures, it is important to clarify the current situation. In the one area considered here, general and professional requirements for all teachers, there is considerable agreement among states, professional associations, and the members of the educational community. There is also some disagreement between and within these different groups. (As not all states have any one requirement, neither do all professional associations recommend any one area.) With studies such as this, it is possible to see where we are and how far we need to go in the process of agreeing on a knowledge base for teachers. Such studies are warranted because of the high stakes involved in teacher education and licensure. Licensure decisions affect not only teachers and prospective teachers, but the institutions that prepare them, and, most importantly, the children who learn from them.

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Table 1
Human Development and Learning

Project C H A R T State Requirements and Professional Association Recommendations		
Content Areas	**States**	**Assoc.**
Stages/Patterns/Theories of Development		
Child/Adolescent Psychology	20	1
Human Growth and Development	39	2
Relationship of Teaching and Learning Theories to Development	10	1
Sequential Nature of Subject Knowledge Acquisition	12	1
Study of the Learning Process, Educational Psychology, Theories of Learning, Knowledge of the Learner	39	3
Factors Affecting Development and Learning		
Influences which Affect Student Learning/Life	5	1
Mental Hygiene	1	0
Physiological/Sociological Effects of Substance Abuse	2	0

Job Analysis Mean Importance Ratings					
Content Areas	**Total Sample**	**Teachers**	**School Admin.**	**State Admin.**	**Teacher Educators**
A. Human Development and the Learning Process					
1. Understand major theories of human development and learning	2.99	2.82	3.10	3.23	3.20
2. Cognitive development stages/patterns	3.30	3.00	3.39	3.73	3.60
3. Physical development stages/patterns	3.09	2.95	3.20	3.54	3.23
4. Affective development stages/patterns	3.52	3.38	3.70	3.73	3.60
5. Social development stages/patterns	3.18	3.07	3.21	3.38	3.36
6. Language acquisition and development stages/patterns	3.06	2.89	3.06	3.35	3.40
7. Biological factors (e.g., gender, age, physical stature) that influence learning	2.76	2.63	2.82	3.15	2.94
8. Familial factors (e.g., parental child-rearing attitudes) that influence learning	2.89	2.75	2.93	3.08	3.05
9. Social/economic factors (e.g., socio-economic status, homelessness) that influence learning	2.95	2.79	2.99	3.20	3.23
10. Nutritional/hygienic factors (e.g., neglect, abuse) that influence learning	3.01	2.98	3.04	3.27	3.05
11. Cultural factors (e.g., the effects of the dominant cultural values) the influence learning	2.89	2.66	2.89	3.54	3.38
12. Linguistic factors (e.g., differences in home and school language) that influence learning	2.73	2.57	2.65	3.23	3.07
13. Educational contexts (e.g., school climate) that influence learning	3.17	3.03	3.26	3.35	3.33
14. How one's own world view, actions are influenced by various factors	3.14	2.94	3.18	3.42	3.46

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Table 2
Curriculum Planning and Design

Project C H A R T State Requirements and Professional Association Recommendations		
Content Areas	**States**	**Assoc.**
Concept of Scope and Sequence	1	0
Curriculum Planning (including Diagnostic Capabilities and Program Design)	31	2
Educational Goals and Objectives	2	1
Impact of Technology and Societal Changes on Schools	1	2
Organization & Presentation of Classroom Information, Materials and Resources	1	0
Program Assessment/Evaluation	3	0

Job Analysis Mean Importance Ratings					
Content Areas	**Total Sample**	**Teachers**	**School Admin.**	**State Admin.**	**Teacher Educators**
B. Knowledge of Curriculum Planning and Design					
16. Social/political conditions	2.66	2.48	2.71	2.58	2.99
17. Social/political forces that influence teacher decision-making	2.67	2.54	2.62	2.62	3.04
18. Social/political/historical events that influence curricula planning	2.59	2.46	2.56	2.58	2.86
19. Relationship of instructional activities to characteristics of learners	3.57	3.47	3.62	3.81	3.68
20. Characteristics of the school population (e.g., rural *vs.* urban)	3.00	2.90	2.94	3.19	3.26
21. Current trends and research findings in education (e.g., magnet schools)	2.97	2.78	3.24	3.12	3.13
22. Philosophical underpinnings and definitions of of education held by curricula planners	2.33	2.12	2.40	2.46	2.72
23. Processes of curriculum/program development, implementation, evaluation, revision	2.80	2.68	2.84	2.81	2.99
24. Processes of curricular materials selection and evaluation	2.70	2.63	2.63	2.69	2.88
25. Differentiating characteristics of various models of curricula	2.57	2.39	2.70	3.00	2.77
26. Learning trends influencing models of curricula (e.g., process approach)	2.70	2.46	2.90	2.85	2.99

Table 3
Management of the Learning Process

Project C H A R T State Requirements and Professional Association Recommendations		
Content Areas	**States**	**Assoc.**
General Teaching Techniques		
Alternative Teaching Techniques & Materials for Normal & Exceptional Children in Field of Specialization	1	0
Directed Teaching	1	0
Methods, Materials, Techniques & Strategies for Teaching including the Impact of Reading Ability	1	0
Methods, Materials, Techniques & Strategies for Teaching	46	2
Principles of Effective Practice	0	1
Strategies for Individual Learning Needs	4	1
Teacher Characteristics/Behaviors as they Affect the Learner	12	1
Theories of Teaching	12	1
Management Techniques		
Classroom Management	30	2
Interpersonal Skills/Human Relations	25	5
Facilitation of Group Processes	1	0
Facilitation of Parent-Teacher Cooperation	1	0
Guidance	2	0
Methods/Attitudes to Enhance Pupil Self Esteem/Confidence	17	1
Methods of Creating a Positive Environment	1	0

Job Analysis Mean Importance Ratings					
Content Areas	**Total Sample**	**Teachers**	**School Admin.**	**State Admin.**	**Teacher Educators**
C. Management of the Learning Process					
28. How to structure lessons based on the needs/ characteristics of diverse populations	3.17	2.91	3.22	3.65	3.52
29. How to structure lessons based on students' prior knowledge	3.35	3.25	3.33	3.58	3.54
30. How to structure lessons based on instructional objectives	3.47	3.33	3.61	3.54	3.59
31. How to select motivational techniques	3.74	3.72	3.85	3.69	3.69
32. How to select appropriate resources and materials	3.38	3.31	3.37	3.52	3.44
33. How to structure evaluation plans	3.47	3.35	3.54	3.64	3.60
34. Grouping for instruction (e.g., interest, ability, size)	3.20	3.14	3.29	3.16	3.22
35. Adjustments based on students' changing interests, relevant materials, news, etc.	3.09	2.95	3.16	3.28	3.28
36. Adjustments based on informal diagnosis of students' achievement and progress	3.27	3.10	3.37	3.56	3.46
37. Repertoire of teaching strategies	3.69	3.58	3.79	3.76	3.82
38. Use of space (e.g., learning centers, writing labs, math labs)	3.05	2.93	3.11	3.08	3.14
39. Allocation of time for instructional activities, including transition times	3.23	3.09	3.37	3.32	3.32
40. Attention to and structuring of climate for learning	3.52	3.39	3.69	3.68	3.59
41. Classroom and school expectations, rules, routines, and procedures	3.29	3.27	3.39	2.92	3.29
42. Dynamics of interpersonal relationships: teacher-student, student-student	3.44	3.31	3.54	3.48	3.56

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Project C H A R T State Requirements and Professional Association Recommendations		
Content Areas	**States**	**Assoc.**
Motivation Theories and Methods	5	0
Social Interaction: Classroom, School Community	9	1
Instructional Mediaand Technology		
Computer Literacy and Technology	9	0
Instructional Media Technology	20	2
Teaching Children with Exceptionalities		
Exceptional Child Education	27	1
IEP	3	0
Instructional Strategies for Exceptionalities including Handicapped through Gifter	13	0
Teaching Exceptional Children in the Regular Classroom	1	0
Teaching Thinking, Reading, and Writing		
Teaching Problem-Solving and Critical Thinking Skills	2	0
Teaching Reading in the Content Specialization Area	33	1
Teaching Thinking, Listening, Speaking	2	0
Teaching Writing in the Content Specialization Area	2	0

Job Analysis Mean Importance Ratings					
Content Areas	**Total Sample**	**Teachers**	**School Admin.**	**State Admin.**	**Teacher Educators**
43. Teacher behaviors appropriate to individual and cultural diversity	3.33	3.17	3.36	3.76	3.58
44. Nonverbal communication skills (e.g., manner, movement, eye contact)	3.26	3.22	3.34	3.24	3.27
45. Operation and use of electronic media (e.g., computers, videotape players)	2.93	2.91	2.92	2.96	2.94
46. Use of different disiplinary styles to promote student learning and behavior	3.67	3.63	3.73	3.76	3.69
47. Use of out-of-school external resources (e.g., persons, field trips)	2.75	2.70	2.76	2.68	2.74

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Table 4
Assessment and the Learning Process

Project C H A R T State Requirements and Professional Association Recommendations			Job Analysis Mean Importance Ratings					
Content Areas	States	Assoc.	Content Areas	Total Sample	Teachers	School Admin.	State Admin.	Teacher Educators
Basic Issues and Concepts			**D. Assessment and the Learning Process**					
Educational Measurement and Evaluation	27	1	49. Methods for gathering background information (e.g., cumulative folders, interviews)	2.85	2.67	2.96	3.04	3.05
Evaluation of Teaching and Learning	1	0	50. Use of student learning tasks/products as diagnostic aids	3.20	2.98	3.27	3.54	3.54
Unethical, Illegal, and Otherwise Inappropriate Assessment Methods and Uses of Assessment Information	0	1	51. Methods for establishing multiple records of evidence of student progress	2.96	2.74	3.03	3.42	3.25
Valid Grading Procedures Using Assessments	1	1	52. Methods for gathering quantitative data about student learning/achievement	2.94	2.78	3.07	3.31	3.12
The Assessment Process			53. Teacher self-evaluation as a means to enhance instructional effectiveness	3.12	2.94	3.19	3.23	3.41
Administering, Scoring and Interpreting Assessment Results	0	1	54. Measurement concepts (e.g., validity, reliability, standardization)	2.62	2.47	2.62	2.85	2.92
Applying Assessment Results	0	1	55. Evaluation issues (e.g., non-discriminatory evaluation, inappropriate use of tests)	2.76	2.55	2.67	3.23	3.19
Assessment Techniques	0	1	56. Methods for interpreting and reporting to students, parents, etc.	3.06	2.86	3.08	3.46	3.33
Choosing Appropriate Assessment Methods	0	1						
Communicating Assessment Results	0	1						
Developing Appropriate Assessment Methods	0	1						

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Table 5
Professional Issues Related to Teaching and Learning

Project C H A R T State Requirements and Professional Association Recommendations		
Content Areas	**States**	**Assoc.**
Issues Affecting Education		
Current Issues in Education	3	0
Educational Policy	0	1
Issues related to Children at Risk	1	0
Physiological/Sociological Effects of Substance Abuse	2	0
Problems in Education	1	0
Recognition and Reporting of Child Abuse/Neglect	2	0
Referral Process/Techniques	3	0
School Organization	14	0
State and Local Resources	5	0
State and National Certification	2	0
Rights and Responsibilities		
Least Restrictive Environment	15	1
Legal and Ethical Implications of Teaching	1	0
Professional Ethics and Responsibilities	7	1
School Law including Rights and Responsibilities	15	1
Professional Resources		
Educational Research	8	1
Professional Organizations	13	1

Job Analysis Mean Importance Ratings					
Content Areas	**Total Sample**	**Teachers**	**School Admin.**	**State Admin.**	**Teacher Educators**
E. Professional Issues Related to Teaching And Learning					
58. Social issues (e.g., substance abuse, teenage pregnancy, child abuse, homelessness) that affect education	3.30	3.28	3.25	3.38	3.29
59. School-related issues (e.g., school restructuring, school-based management plans) that affect education	3.05	3.05	3.05	3.15	3.09
60. Political issues (e.g., school board elections, budgets, voucher systems) that affect education	2.25	2.22	2.09	2.35	2.45
61. Schools' legal responsibilities to special populations as determined by federal law	2.81	2.68	2.77	2.92	3.13
62. Issues related to employment (e.g., selection, promotion, tenure, termination)	2.61	2.72	2.33	2.35	2.74
63. Teachers' legal rights inside and outside of the classroom	3.06	3.09	2.81	3.31	3.19
64. Students' legal rights inside and outside of the classroom	3.19	3.13	3.12	3.54	3.31
65. Regulations and practices based on federal law	2.65	2.59	2.56	2.65	2.83
66. Roles and functions of school-related personnel	2.73	2.67	2.86	2.69	2.67
67. Roles and functions of professional organizations in education	2.28	2.26	2.04	2.27	2.52
68. Professional literature for teachers	2.85	2.61	2.84	2.81	3.30

Project C H A R T State Requirements and Professional Association Recommendations			Job Analysis Mean Importance Ratings					
Content Areas	States	Assoc.	Content Areas	Total Sample	Teachers	School Admin.	State Admin.	Teacher Educators
Study of Teaching	1	0						
Study of the School	1	0						
Foundations								
Classrooms and Schools as Social Systems	0	1						
Foundations of Education (Social, Historical, Comparative, Philosophical)	43	2						
Social Foundations	1	0						

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